Monthly Progress Report

Rec'd
8-10-90
F.B.

Submitted to: Mr. Frank Battaglia, Project Manager
USEPA Region I
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I.D. NO.: RIDOO1174323
FILE LOC: R-9
OTHER:

Pursuant to: RCRA I-88-1088

Facility Site: Cranston, RI

Period Covered: July 1990 (11 July 1990 – 27 July 1990)*

Date Submitted: 10 August 1990

1.0 SUMMARY

This is the first monthly progress report. Seven significant events occurred this month. These events are summarized in this section and discussed in detail in later sections of this report.

Phase IA Authorization. Authorization to begin Phase IA of the Work Plan was granted on 7/11/90 by USEPA Region I.

Mobilization (Task 1). The site was staged to accommodate field investigations.

Geophysical Investigation (Task 2.1). Data acquisition for all of the geophysical investigations — seismic refraction, electrical resistivity, and ground-penetrating radar surveys — was completed. Data reduction and interpretation began.
Change in Plan: An additional survey line, oriented perpendicular to the bulkhead, was run in the Production Area for both the seismic refraction and electrical resistivity surveys. [Section 8.0 discusses changes in the Work Plan.]

Geologic Investigation (Task 2.2). The geologic investigation began on 7/16/90. Borings were advanced, soil was sampled, and field screening of soil samples was performed; rock coring began.
Change in Plan: After soil sampling of boring RW-1 (Production Area) was complete, the boring was grouted before the well was installed. Monitoring well RW-1 was offset upgradient of boring RW-1.

Hydrogeologic Investigation (Task 2.3). The hydrogeologic investigation began. Installation of all 11 piezometers was completed; installation of rock wells began.
Changes in Plan: The location of P-16S was offset to the northeast because of proximity to a sewer line; the locations of P-21S and P-21D were offset to the west because of drill rig access problems.

*As agreed, the reporting period will be monthly through the fourth Friday of the month.

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Hydrologic Investigation (Task 2.4). River reconnaissance was completed. Transects were established; the bathymetric survey was completed. One surface water/suspended sediment discharge monitoring event was completed. Sampling of sediments began.

Surveying (Task 3). Surveying began ahead of schedule. All three study areas of the site (Production, Waste Water Treatment, and Warwick) were gridded for the ground-penetrating radar survey.

2.0 TASKS AND ACTIVITIES COMPLETED

No tasks were completed (and none were scheduled to be completed) during this reporting period. The sampling and other activities (subtasks) that were completed are reported here.

2.1 Sampling Activities Completed

The following sampling activities were completed:

Sampling Activity	Location(s)	Date(s) Sampled	No. of Samples	Date(s) Sent for Analysis
Soil Sampling, disturbed	RW-1, -2, -3, -4; P19D, P21D, P22D	7/17–23/90; 7/26/90	21	7/23/90; 7/26/90
Soil Sampling, Shelby	RW-1, -2, -3, -4; P19D, P21D	7/17–20/90	9	7/23/90; 7/26/90
River Water Sampling	F02, F08	7/25/90	22	7/25/90
River Sediment Sampling, disturbed	F01R, F01AR, F02R, F03R, F05L, F10R	7/25–26/90	6	7/26/90
River Sediment Sampling, undisturbed	F01R, F01AR, F02R, F03R, F05L, F10R	7/25–26/90	6	7/26/90

Details about these activities are presented in Table 1. Field screening (OVA and HNu) analyses of soil samples were conducted; the results of field screening appear in Table 2.

2.2 Other Activities Completed

Other activities (subtasks) were completed within several tasks.

Mobilization (Task 1). Most of the mobilization was completed during this reporting period, including:

1. preparing the site for field activities,
2. obtaining the necessary approvals and permits from local governments,
3. establishing the scope of work and signing contracts with subcontractors (who include geophysicists, surveyors, laboratories, river investigators, drillers, and construction contractors),
4. hiring an environmental engineer to design three decontamination pads (one per study area),
5. refurbishing part of the warehouse building at the site to support field studies, and
6. preparing or obtaining the equipment necessary for field studies.

Geophysical Investigation (Task 2.1). Data acquisition for the seismic refraction, electrical resistivity, and ground-penetrating radar surveys was completed.

Geologic Investigation (Task 2.2). Borings were advanced and soil sampling was completed; field screening analyses of soil samples were completed. Outer casings for all rock wells (except RW-1) were installed using an air rig; an air rig was not available at the time boring RW-1 was sampled.

Hydrogeologic Investigation (Task 2.3). All 11 piezometers were installed.

Hydrologic Investigation (Task 2.4). A river reconnaissance was performed. Other activities completed include:

1. establishing transects,
2. performing a bathymetric survey,
3. performing one surface water/suspended sediment discharge monitoring event, and
4. sampling bottom sediment.

Surveying (Task 3). The site was gridded for the ground-penetrating radar survey. A 10- x 10-foot grid was established in the Production Area; 20- x 20-foot grids were established for the Waste Water Treatment and Warwick areas. Survey lines were tied to the Rhode Island Coordinate Grid System.

Health and Safety (Task 13). An internal Woodward-Clyde Consultants (WCC) health and safety audit was performed at the site on 7/25/90 and 7/26/90 to ensure compliance with the *WCC Health and Safety Plan.* The audit indicated that field work was being performed in accordance with the provisions of both the WCC plan and applicable OSHA regulations.

Oversight. Alliance Technology conducted an oversight audit on-site. No non-conformances were noted at the exit interview.

3.0 JEOPARDY TASKS (Scheduled tasks not completed)

No tasks were in jeopardy as of 27 July 1990.

4.0 OTHER TASKS UNDERWAY (and on schedule)

The tasks that were underway (and on schedule as of 27 July 1990) are reported here.

Geophysical Investigation (Task 2.1). Data reduction and interpretation began.

Geologic Investigation (Task 2.2). Rock coring began.

Hydrogeologic Investigation (Task 2.3). The installation of rock wells began.

Hydrologic Investigation (Task 2.4). Discharge monitoring began; one of the three events was completed, but weather conditions delayed the other two events. Bed sediment sampling began; five of the eight locations were completed, but the other three locations could not be completed because the matrix contained too much gravel. [See Section 6.2.]

5.0 DATA OBTAINED

The sampling results and other data obtained are reported here.

5.1 Sampling Results

No laboratory sampling results have been received. The results of the field screening analyses are presented in Table 2.

5.2 Other Data Obtained

The following other data were obtained.

Field Logs. Field logs were obtained for drilling activities. These data have not yet been reduced.

Other Data. Bathymetric, geologic, and hydrologic data have been obtained. These data have not yet been reduced.

6.0 PROBLEM AREAS

The resolved, new, and potential (i.e., anticipated or possible) problem areas are reported here.

6.1 Resolved Problem Areas

There were no existing problem areas to resolve this month.

6.2 New Problem Areas

Two new problem areas were identified; both arose in the Hydrologic Investigation (Task 2.4; cf., Volume 1, Chapter 3, Section 3.7.3 of the *RCRA Facility Investigation Proposal*). Both problems are explained here. The plan and anticipated date for resolving each problem are provided.

Delays in Two Surface Water/Suspended Sediment Discharge Monitoring Events

Only one of the three surface water/suspended sediment discharge monitoring events was completed; the other two events are behind schedule.

Explanation of the Problem. The high discharge event was completed; both low discharge events (which depend on the weather and subsequent equilibration of the river) will be completed as soon as weather permits. Surface water samples collected during the discharge event will be analyzed for total suspended solids; this analysis will require five weeks, so the results may not be available for the Phase IA Report.

Plans for Resolution. Wait for lower flow river conditions and perform the planned events as soon as possible. If analytical data from sampling of surface water are not available for the Phase IA Report, those data will be presented in the Monthly Progress Report for the month in which they become available. We anticipate completing the two low flow events in August.

Delays in Obtaining Bed Sediment Samples at Three Locations

Only five of the eight river bed sediment locations were sampled; obtaining the other three samples is behind schedule.

Explanation of the Problem. Gravels, cobbles, and boulders could not be retrieved from the targeted sample locations on the river bottom using the sampling equipment specified in the Work Plan.

Plans for Resolution. Resampling will be attempted using a Shipek Model 860 sediment grab sampler. We anticipate obtaining the three samples by 8/7/90.

6.3 Potential Problem Areas

No potential problem areas or issues of concern were identified.

7.0 PROJECTED SCHEDULE OF TASKS (next two months)

The projected schedule (based on Figure 5-2 in Volume 1, Chapter 2 of the *RCRA Facility Investigation Proposal*) is provided here. It covers the tasks to be performed in the next two months (August and September, 1990), along with other comments or considerations.

Target Date	Task#	Task	Comments/Considerations
8/1/90	1	Mobilization	
8/15/90	2.2	Geologic Investigation	
8/22/90	2.1	Geophysical Investigation	
8/22/90	2.3	Hydrogeologic Investigation	
8/22/90	2.4	Hydrologic Investigation	
9/10/90	8	August Progress Report	
ongoing	9	Project Management	
ongoing	10	Data Management	
ongoing	11	Project Administration	
ongoing	12	Quality Assurance	
ongoing	13	Health & Safety Assurance	WCC conducted H&S audit; compliance was noted.

8.0 CHANGES IN WORK PLAN

The changes made to Phase IA of the Work Plan are reported here; the rationale for each change is given.

Geophysical Investigation (Task 2.1). An additional survey line, perpendicular to the bulkhead, was run in the Production Area for use in both the seismic refraction and the electrical resistivity surveys. This additional line was necessary because of electronic interference from the bulkhead encountered in the line parallel to the bulkhead.

Geologic Investigation (Task 2.2). After soil sampling of boring RW-1 (in the Production Area) was complete, the boring was grouted before the well was installed. This change was necessary because the ground water along the bulkhead is contaminated, and grouting minimizes the potential of bringing contaminants down into the bedrock aquifer. In addition, monitoring well RW-1 was offset upgradient of boring RW-1 to avoid creating preferential pathways that could allow contaminants to migrate into the bedrock aquifer.

Hydrogeologic Investigation (Task 2.3). The location of P-16S was offset to the northeast because of proximity to a sewer line; the locations of P-21S and P-21D were offset to the west because of drill rig access problems.

9.0 OTHER COMMENTS

The plans going forward into August and September include:

- completing the Phase IA field investigation,
- reducing the data collected,
- proceeding on those subtasks that are not in the critical path (e.g., literature reviews), and
- preparing the Phase IA Report.

Table 1 (Laboratory Sample Log) and Table 2 (Field Screening of Soil Samples) are attached.

TABLE 1

CIBA-GEIGY FACILITY, CRANSTON, RHODE ISLAND

LABORATORY SAMPLE LOG (RADIAN LABORATORY*)

SAMPLES SENT 23-26 JULY 1990

A. Shipment of Samples 23 July 1990

WCC FIELD SAMPLE I.D.	MATRIX SAMPLED	SAMPLING EQUIPMENT	DEPTH	SAMPLE TAKEN BY	DATE COLLECTED	DATE SHIPPED	ANALYSES REQUESTED
RW-1 SS-24	soil	split spoon	51-53	MC	17 July	23 July	PSD
RW-1 SS-20	soil	split spoon	41-43	MC	17 July	23 July	PSD
RW-1 SS-8	soil	split spoon	17-19	MC	17 July	23 July	PSD
RW-1 SS-13-15	soil	split spoon	27-33	MC	17 July	23 July	PSD
RW-2 SB-2	soil	split spoon	--	KM	17 July	23 July	PSD
RW-2 S-22	soil	split spoon	--	KM	17 July	23 July	PSD
RW-2 S-15	soil	split spoon	--	KM	17 July	23 July	PSD
RW-3 S-4	soil	split spoon	--	KM	17 July	23 July	PSD
RW-3 S-7	soil	split spoon	--	KM	17 July	23 July	PSD
RW-4 SS-9	soil	split spoon	16-18	MC	17 July	23 July	PSD
RW-4 SS-5	soil	split spoon	8-10	MC	17 July	23 July	PSD
P19D SS1-2	soil	split spoon	0-3	MC	17 July	23 July	PSD
P19D SS-4	soil	split spoon	6-8	MC	17 July	23 July	PSD
P19D SS-6-7A	soil	split spoon	10-13.5	MC	17 July	23 July	PSD
P21D SS-5	soil	split spoon	8-10	MC	17 July	23 July	PSD
P21D SS-15	soil	split spoon	32-34	MC	17 July	23 July	PSD
P21D SS-1	soil	split spoon	0-2	MC	17 July	23 July	PSD
P21D SS-18	soil	split spoon	40-42	MC	17 July	23 July	PSD
RW-2 ST-1	soil	Shelby tubing	--	KM	17 July	23 July	PSD,B,P,H
RW-1 ST-1	soil	Shelby tubing	45-47	MC	17 July	23 July	PSD,B,P,H
RW-3 ST-2	soil	Shelby tubing	--	KM	17 July	23 July	PSD,B,P,H
RW-4 ST-1	soil	Shelby tubing	24-26	MC	17 July	23 July	PSD,B,P,H
RW-3 ST-1	soil	Shelby tubing	--	KM	17 July	23 July	PSD,B,P,H
P19D ST-2	soil	Shelby tubing	20-22	MC	17 July	23 July	PSD,B,P,H
P19D ST-1	soil	Shelby tubing	14-16	MC	17 July	23 July	PSD,B,P,H
P21D ST-1	soil	Shelby tubing	16-18	MC	17 July	23 July	PSD,B,P,H
P21D ST-2	soil	Shelby tubing	30-32	MC	17 July	23 July	PSD,B,P,H

*See notes on page 3.

B. Shipment of Samples 25 July 1990

WCC FIELD SAMPLE I.D.	MATRIX SAMPLED	SAMPLING EQUIPMENT	SAMPLE TAKEN BY	DATE COLLECTED	DATE SHIPPED	ANALYSES REQUESTED
DSD 65.0	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 85.0	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 47.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 57.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 75.0	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 37.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 42.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 32.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 10.0	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 25.0	river water	peristaltic pump	MD	25 July	25 July	TSS
DSD 52.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 87.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 30.0	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 12.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 50.0	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 92.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 17.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 102.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 7.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 82.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 107.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 97.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 2.5	river water	peristaltic pump	MD	25 July	25 July	TSS
DSU 70.0	river water	peristaltic pump	MD	25 July	25 July	TSS

C. Shipment of Samples 26 July 1990

WCC FIELD SAMPLE I.D.	MATRIX SAMPLED	SAMPLING EQUIPMENT	DEPTH	SAMPLE TAKEN BY	DATE COLLECTED	DATE SHIPPED	ANALYSES REQUESTED
P22D SS-23	soil	split spoon		MC	24 July	26 July	PSD
P22D SS-3B	soil	split spoon		MC	23 July	26 July	PSD
P22D SS-5	soil	split spoon		MC	26 July	26 July	PSD
SD-F01R	river sediment	grab sampler		MD	26 July	26 July	CEC, pH, TOC
SD-F01A-R	river sediment	grab sampler	0-1'	MD	26 July	26 July	CEC, pH, TOC
SD-F10R	river sediment	grab sampler	0-1'	MD	26 July	26 July	CEC, pH, TOC
SD-F01R	river sediment	push corer	0-1'	MD	26 July	26 July	P, B, PSD
SD-F01A-R	river sediment	push corer	0-1'	MD	26 July	26 July	P, B, PSD
SD-F01R	river sediment	push corer	0-1'	MD	26 July	26 July	P, B, PSD
SD-F02R	river sediment	grab sampler	0-1'	MD	25 July	26 July	CEC, pH, TOC
SD-F03R	river sediment	grab sampler	0-1'	MD	25 July	26 July	CEC, pH, TOC
SD-F05L	river sediment	grab sampler	0-1'	MD	25 July	26 July	CEC, pH, TOC
SD-F02R	river sediment	push corer	0-1'	MD	25 July	26 July	B, P, PSD
SD-F03R	river sediment	push corer	0-1'	MD	25 July	26 July	B, P, PSD
SD-F05L	river sediment	push corer	0-1'	MD	25 July	26 July	B, P, PSD

Notes:

1. The laboratory sample log presents a listing of all samples sent for analysis to the Radian Corporation's Contract Laboratory Program Laboratories in Texas and Wisconsin. For this sampling period, soil samples for Cation Exchange Capacity (CEC), soil pH, and Total Organic Carbon (TOC) were sent to Wisconsin. Water samples for Total Suspended Solids (TSS) and soil samples for hydraulic conductivity (H), bulk density (B), porosity (P), and particle size distribution (PSD) were sent to Texas.

2. WCC samplers, Wayne, NJ: MC - Marion Craig, MD - Mary Dombrowski, KM - Kevin Murphy

3. Preservation of 4°C warranted for TOC soil samples and TSS river water samples.

4. All depths are given in feet.

5. Soil sample locations are shown on Figure A which was included in the RFI Work Plan as Volume 1, Chapter 3, Figure 3-3. River water and river sediment sample locations are shown in Figure B which was included in the RFI Work Plan as Volume 1, Chapter 3, Figure 3-4.

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TABLE 2
CIBA-GEIGY FACILITY, CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES*

A. Field screenings made on 17 July.

WCC Field Sample I.D.	TOV: ppm (2 sec)	TOV: ppm (20 sec)	TOV: ppm (60 sec)	Time Bath (in)	Time Bath (out)	Time of Screening
RW-1 SS-1	0.7	--	--	16:30	16:45	16:47
RW-1 SS-2A	125	--	--	16:30	16:45	16:50
RW-1 SS-2B	600	--	--	16:30	16:45	16:53
RW-1 SS-3	140	--	--	16:30	16:45	16:55
RW-1 SS-4	400	--	--	16:30	16:45	16:58
RW-1 SS-5	200	--	--	16:30	16:45	17:00
RW-1 SS-6A	250	--	--	17:00	17:15	17:17
RW-1 SS-6B	52	--	--	17:00	17:15	17:20
RW-1 SS-7A	7	--	--	17:00	17:15	17:23
RW-1 SS-7B	9	--	--	17:00	17:15	17:26
RW-1 SS-8	20	--	--	17:00	17:15	17:29
RW-1 SS-9	6	--	--	17:00	17:15	17:31
RW-1 SS-10	12	--	--	17:20	17:35	17:37
RW-1 SS-11A	40	--	--	17:20	17:35	17:39
RW-1 SS-11B	5	--	--	17:20	17:35	17:41
RW-1 SS-15	2	--	--	17:20	17:35	17:43
RW-1 SS-18A	2	--	--	17:20	17:35	17:45
RW-1 SS-19	1	--	--	17:20	17:35	17:48

*See notes on page 10.

Note: All readings on 17 July were performed with the HNu.

TABLE 2 (continued)
CIBA-GEIGY FACILITY, CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES

WCC Field Sample I.D.	TOV: ppm (2 sec)	TOV: ppm (20 sec)	TOV: ppm (60 sec)	Time Bath (in)	Time Bath (out)	Time of Screening
RW-1 SS-21B	1	--	--	17:40	17:55	17:57
RW-1 SS-22A	1	--	--	17:40	17:55	17:59
RW-1 SS-22B	1	--	--	17:40	17:55	18:01
RW-1 SS-23	1	--	--	17:40	17:55	18:03
RW-1 SS-24	1	--	--	17:40	17:55	18:05
RW-1 SS-25	1	--	--	17:40	17:55	18:08
RW-1 SS-26	1	--	--	18:01	18:16	18:18
RW-1 SS-27	1	--	--	18:01	18:16	18:20
RW-1 SS-13	16	--	--	18:01	18:16	18:23
RW-1 SS-16	0.4	--	--	18:01	18:16	18:26
RW-1 SS-17	0.6	--	--	18:01	18:16	18:30
RW-1 SS-20	0.6	--	--	18:01	18:16	18:33
RW-1 SS-21A	0.4	--	--	18:20	18:35	18:37
RW-1 SS-28	0.6	--	--	18:20	18:35	18:39
RW-1 SS-18B	0.4	--	--	18:20	18:35	18:42
RW-1 SS-14	6	--	--	18:20	18:35	18:45
RW-1 SS-12	16	--	--	18:20	18:35	18:48

TABLE 2 (continued)
CIBA-GEIGY FACILITY, CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES

WCC Field Sample I.D.	TOV: ppm (2 sec)	TOV: ppm (20 sec)	TOV: ppm (60 sec)	Time Bath (in)	Time Bath (out)	Time of Screening
RW-2 S-1	0.8	--	--	18:40	18:55	18:57
RW-2 S-3	0.6	--	--	18:40	18:55	19:00
RW-2 S-4	5.0	--	--	18:40	18:55	19:02
RW-2 S-5	6.0	--	--	18:40	18:55	19:04
RW-2 S-6	0.6	--	--	18:40	18:55	19:06
RW-2 S-8	1.2	--	--	18:40	18:55	19:08
RW-2 S-9	0.4	--	--	18:58	19:13	19:15
RW-2 S-10	0.4	--	--	18:58	19:13	19:17
RW-2 S-12	0.4	--	--	18:58	19:13	19:19
RW-2 S-13	0.4	--	--	18:58	19:13	19:21
RW-2 S-14	0.4	--	--	18:58	19:13	19:23
RW-2 S-16	0.2	--	--	18:58	19:13	19:25
RW-2 S-17	0.4	--	--	19:15	19:30	19:32
RW-2 S-18	0.2	--	--	19:15	19:30	19:35
RW-2 S-19	0.4	--	--	19:15	19:30	19:37
RW-2 S-20	0.4	--	--	19:15	19:30	19:40
RW-2 S-21	0.5	--	--	19:15	19:30	19:42
RW-2 S-23	0.4	--	--	19:15	19:30	19:45
RW-2 S-24	0.2	--	--	19:35	19:50	19:52
RW-2 S-25	0.4	--	--	19:35	19:50	19:54

TABLE 2 (continued)
CIBA-GEIGY FACILITY, CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES

B. Field screenings made on 18 July.

WCC Field Sample I.D.	HNu (H) - OVA 128 (0) TOV: ppm (2 sec)[1]	HNu (H) - OVA 128 (0) TOV: ppm (20 sec)	Time TOV: ppm (60 sec)	Time Bath (in)	Time Bath (out)	Time of Screening
RW-3 SS-1	300 (0) quick dropoff[B]	--	--	15:45	16:00	16:02
RW-3 S-8	20 (0) quick dropoff[B]	--	--	15:45	16:00	16:04
RW-3 S-2	450 (0) quick dropoff[B]	--	--	15:45	16:00	16:07
RW-3 S-3	450 (0) quick dropoff[B]	--	--	15:45	16:00	16:10
RW-3 S-5	380 (0) quick dropoff[B]	--	--	15:45	16:00	16:13
RW-3 S-6	400 (0) quick dropoff[B]	--	--	15:45	16:00	16:15
RW-4 SS-1	background	--	--	17:26	17:41	17:43
RW-4 SS-4	background	--	--	17:26	17:41	17:45
RW-4 SS-4A[A]	background	--	--	17:26	17:41	17:48
RW-4 SS-4B	background	--	--	17:26	17:41	17:50
RW-4 SS-6	3 (H)	--	--	17:26	17:41	17:53

Note:

A. Starting with Sample RW-4 SS-4A (17:45 till the end of the day), readings were procured with the HNu due to the accidential introduction of water into the OVA 128 instrument. A new recalibrated OVA 128 device arrived on-site the following day (19 July 1990).

B. To improve assessing the dropoff of concentration values, three time intervals were introduced after this run involving TOV readings at 2 sec, 20 sec, and 60 sec.

--- No reading taken.

WCC Field Sample I.D.	HNu (H) - OVA 128 (O) TOV: ppm (2 sec)[1]	HNu (H) - OVA 128 (O) TOV: ppm (20 sec)	Time TOV: ppm (60 sec)	Time Bath (in)	Time Bath (out)	Time of Screening
RW-4 SS-7	1 (H)	--	--	17:26	17:41	17:55
RW-4 SS-8	2 (H)	--	--	17:26	17:41	17:58
RW-4 SS-9	1 (H)	--	--	17:26	17:41	17:60
RW-4 SS-12	3 (H)	--	--	17:26	17:41	17:63
RW-4 SS-1A	1 (H)	1 (H)	1 (H)	17:50	18:05	18:08
RW-4 SS-2	1 (H)	1 (H)	1 (H)	17:50	18:05	18:11
RW-4 SS-1B	background	background	background	17:50	18:05	18:14
RW-3 S-10	background	background	background	17:50	18:05	18:16
RW-3 S-13	background	background	background	17:50	18:05	18:18
RW-3 S-14	background	background	background	17:50	18:05	18:21
RW-3 S-9	background	background	background	17:50	18:05	18:24
RW-3 S-17	background	background	background	18:11	18:26	18:29
RW-3 S-18	background	background	background	18:11	18:26	18:32
RW-4 S-11A	0.5 (H)	1.5 (H)	background	18:11	18:26	18:35
RW-4 S-11B	0.5 (H)	1.5 (H)	0.5 (H)	18:11	18:26	18:38
RW-4 S-12B	background	background	background	18:11	18:26	18:40
RW-4 S-13	0.5 (H)	background	background	18:11	18:26	18:43
RW-4 S-14	0.5 (H)	background	background	18:11	18:26	18:45
RW-3 S-16	background	background	background	18:26	18:41	18:43
RW-3 S-19	background	background	background	18:26	18:41	18:46
RW-3 S-20	background	background	background	18:26	18:41	18:48
RW-3 S-21	background	background	background	18:26	18:41	18:50
RW-3 S-22	background	background	background	18:26	18:41	18:53
RW-3 S-12	background	background	background	18:26	18:41	18:57
RW-4 S-12A	1 (H)	0.5 (H)	background	18:26	18:41	19:00
RW-1 SS-6 (reanalysis)	background	background	background	18:26	18:41	19:03

TABLE 2 (continued)
CIBA-GEIGY FACILITY: CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES

C. Field screenings made on 19 July.

WCC Field Sample I.D.	TOV: ppm (2 sec)	TOV: ppm (20 sec)	TOV: ppm (60 sec)	Bath (in)	Bath (out)	Time of Screening
RW-3 S-1	40	10	1-2	12:05	12:20	12:23
RW-3 S-2	45	15	5-6	12:05	12:20	12:27
RW-3 S-3	100	30	3-4	12:05	12:20	12:29
RW-3 S-6	8-9	5-6	1-2	12:05	12:20	12:32
RW-3 S-5	75	1-2	1-2	12:05	12:20	12:35
RW-3 S-8	1-2	background	background	12:05	12:20	12:38
P19-D SS-1	background	background	background	13:41	13:56	13:58
P19-D SS-2A	1	0.5	0.5	13:41	13:56	13:58
P19-D SS-2B	9	3	2	13:41	13:56	13:59
P19-D SS-3A	background	background	background	13:41	13:56	13:59
P19-D SS-3B	9	3	1	13:41	13:56	14:00
P19-D SS-5B	1.5	1.0	0.5	13:41	13:56	14:00
P19-D SS-7B	1.0	1.0	0.5	13:41	13:56	14:02
P19-D SS-4	0.5	0.3	background	13:41	13:56	14:02
RW-3 SS-5A	1.2	0.5	0.2	13:57	14:12	14:19
RW-3 SS-23	background	background	background	13:57	14:12	14:20
RW-3 SS-24	background	background	background	13:57	14:12	14:23
RW-3 SS-25	0.1	background	background	13:57	14:12	14:24
RW-3 SS-26	0.1	background	background	13:57	14:12	14:26
RW-3 SS-27	background	background	background	13:57	14:12	14:27
RW-3 SS-28	0.5	0.5	background	13:57	14:12	14:30
RW-3 SS-29	1.0	0.5	0.5	13:57	14:12	14:32
RW-3 SS-23 (repeat)	background	background	background	--	--	--
RW-3 SS-26 (repeat)	background	background	background	--	--	--

Note: As of 19 July, all readings are with the OVA 128 instrument.

TABLE 2 (continued)
CIBA-GEIGY FACILITY, CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES

WCC Field Sample I.D.	TOV: ppm (2 sec)	TOV: ppm (20 sec)	TOV: ppm (60 sec)	Bath (in)	Bath (out)	Time of Screening
RW-4 SS-5	background	background	background	11:17	11:32	11:40
P19D SS-6-7-A	3	2	0.5	11:17	11:32	11:42
P21D SS-4	40	35	30	11:17	11:32	11:44
P21D SS-2	background	background	background	11:17	11:32	11:47
P21D SS-7C	2.0	1.5	0.5	11:17	11:32	11:50
P21D SS-8	2.5	1.0	0.5	11:17	11:32	11:52
P21D SS-3	100	100	75	11:17	11:32	11:54
P21D SS-7B	2.0	1.0	1.0	11:17	11:32	11:57
P21D SS-7A	600	200	100	11:33	11:48	12:01
P21D SS-6	9	5	25	11:33	11:48	12:03
P21D SS-5	850	825	800	11:53	12:08	12:10
P21D SS-11	1.5	0.5	0.5	13:01	13:16	13:20
P21D SS-9	1.5	0.5	0.1	13:01	13:16	13:23
P21D SS-10	1.0	0.5	0.25	13:01	13:16	13:28
P21D SS-13B	0.25	0.1	0.1	14:11	14:27	14:30
P21D SS-13A	1.0	0.5	0.5	14:11	14:27	14:32
P21D SS-12	0.75	0.5	0.25	14:11	14:27	14:33
P21D SS-14	1.0	0.5	0.25	14:11	14:27	14:34

TABLE 2 (continued)
CIBA-GEIGY FACILITY: CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES

WCC Field Sample I.D.	TOV: ppm (2 sec)	TOV: ppm (20 sec)	TOV: ppm (60 sec)	Bath (in)	Bath (out)	Time of Screening
P21D 17-A	2.0	1.5	1.0	12:10	12:25	12:28
P21D SS-16	0.5	0.25	0.1	12:10	12:25	12:30
P21D SS-17B	1.0	0.75	0.75	12:10	12:25	12:33
P22D SS-1A	0.25	0.1	0.1	4:30	4:45	4:50
P22D SS-1B	background	background	background	4:30	4:45	4:52
P22D SS-3A	0.1	0.1	background	4:30	4:45	4:55
P22D SS-1C	background	background	background	4:30	4:45	4:58
P22D SS-2	0.5	0.25	0.25	4:30	4:45	5:02
P22D SS-4	2.5	1.75	1.0	4:30	4:45	5:05
P22D SS-3B	1.5	0.1	0.1	4:30	4:45	5:08
P22D SS-12B	background	background	background	6:01	6:16	6:20
P22D SS-12A	0.75	0.25	0.1	6:01	6:16	6:22
P22D SS-11B	1.0	0.5	0.25	6:01	6:16	6:25
P22D SS-11A	4.0	2.0	1.0	6:01	6:16	6:27
P22D SS-8	4.0	2.0	1.0	6:01	6:16	6:29
P22D SS-9	3.5	2.0	1.0	6:01	6:16	6:32
P22D SS-11C	background	background	background	6:20	6:35	6:36
P22D SS-6	1.0	0.5	0.5	6:20	6:35	6:38
P22D SS-10	3.75	2.0	1.0	6:20	6:35	6:41
P22D SS-7	0.5	0.25	0.1	6:20	6:35	6:43
P22D SS-5	1.25	1.25	0.5	6:20	6:35	6:45

TABLE 2
CIBA-GEIGY FACILITY: CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES

WCC Field Sample I.D.	TOV: ppm (2 sec)	TOV: ppm (20 sec)	TOV: ppm (60 sec)	Bath (in)	Bath (out)	Time of Screening
P19D SS-8A	0.25	0.1	background	16:24	16:39	16:41
P19D SS-8B	0.5	0.1	background	16:24	16:39	16:44
P19D SS-9A	0.25	0.25	0.1	16:24	16:39	16:46
P19D SS-9B	0.5	0.2	background	16:24	16:39	16:49
P19D SS-10	0.5	0.25	0.1	16:24	16:39	16:52
P19D SS-11	0.5	0.5	background	16:24	16:39	16:55
P19D SS-12	0.75	0.25	background	16:24	16:39	16:59
P22D SS-13B	1.0	0.25	0.1	15:35	15:50	15:51
P22S SS-13A	1.0	0.5	0.5	15:35	15:50	15:53
P22D SS-15A	1.25	0.75	0.75	15:35	15:50	15:55
P22D SS-14A	0.5	0.25	0.25	15:35	15:50	15:57
P22D SS-16	0.25	0.1	background	15:35	15:50	15:58
P22S SS-14B	background	background	background	15:35	15:50	15:60
P22D SS-15B	0.20	0.1	0.1	15:35	15:50	16:02
P22D SS-17	background	background	background	15:35	15:50	16:04
P22D SS-18	background	background	background	15:50	16:05	16:07
P22D SS-19	background	background	background	15:50	16:05	16:10

TABLE 2 (continued)
CIBA-GEIGY FACILITY, CRANSTON, RHODE ISLAND
FIELD SCREENING OF SOIL SAMPLES

WCC Field Sample I.D.	TOV: ppm (2 sec)	TOV: ppm (20 sec)	TOV: ppm (60 sec)	Bath (in)	Bath (out)	Time of Screening
P22D SS-22B	background	background	background	12:50	13:05	13:13
P22S SS-20	background	background	background	12:50	13:05	13:15
P22D SS-21	background	background	background	12:50	13:05	13:18
P22D SS-22A	background	background	background	12:50	13:05	13:21
P22D SS-27A	0.1	0.1	background	12:50	13:05	13:23
P22D SS-26	0.75	0.25	0.1	12:50	13:05	13:25
P22S SS-27B	20.0	5.0	2.5	12:50	13:05	13:27
P22D SS-25	1.0	0.75	0.2	12:50	13:05	13:29
P22D SS-23	background	background	background	13:12	13:27	13:32
P22D SS-24	background	background	background	13:12	13:27	13:33

Notes:

1. TOV - Total Organic Volatile reading

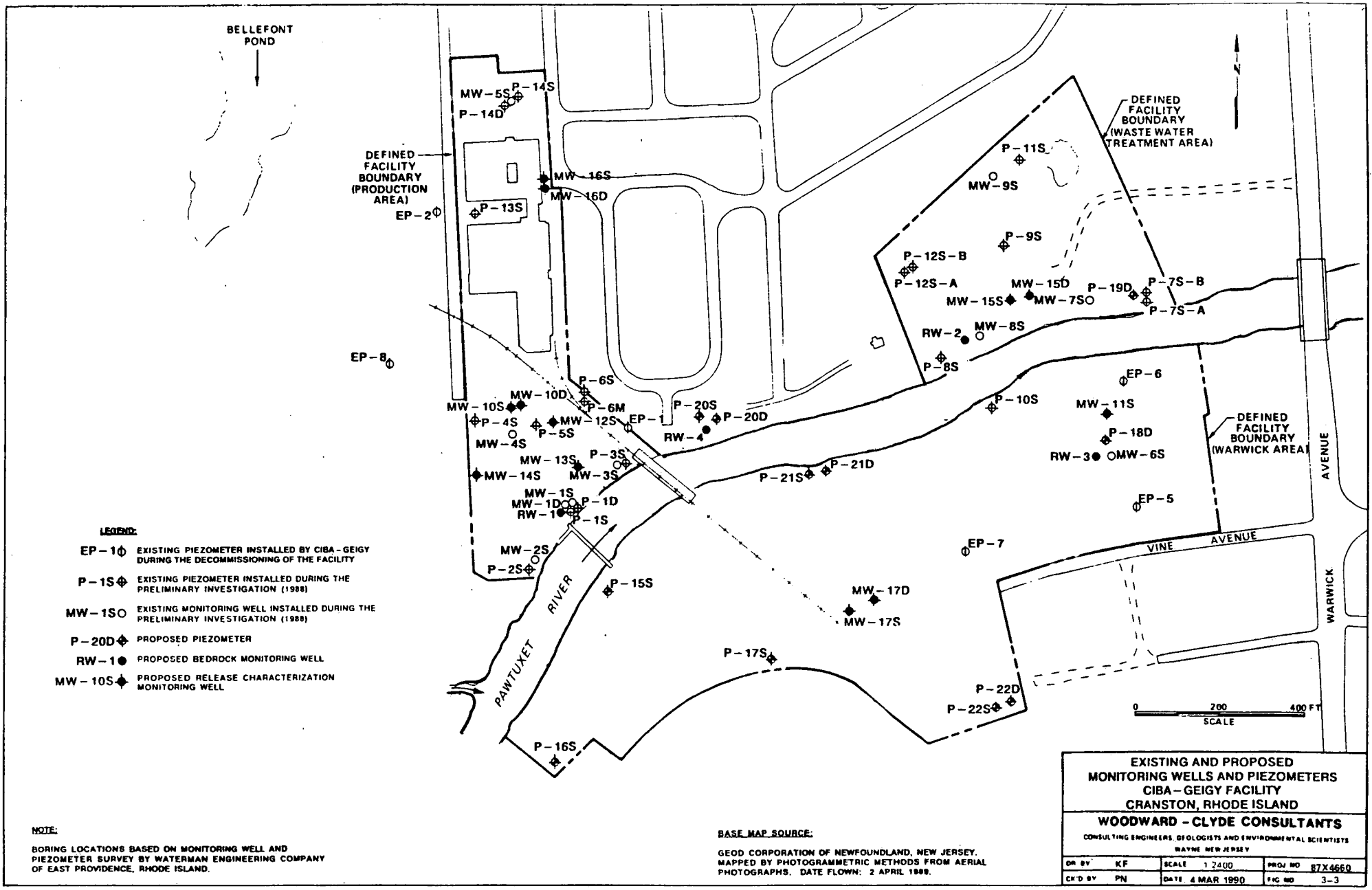
2. (O) - reading procured with a Foxboro OVA 128 instrument in the survey mode
   (H) - reading procured with a HNu (photoionization) detector

3. Three readings (2 sec, 20 sec, 60 sec) were procured to assess probable methane or non-methane contaminants. A quick dropoff of a TOV reading and a non-positive reading on the HNu indicated methane as the contaminant. Readings on both the OVA and HNu indicated a probable non-methane contaminant (i.e., volatile organic contaminant). This OVA/HNu differentiation was also performed on all elevated (i.e., greater than 50 ppm) TOV readings.

4. Bath (in) - time the sample entered the 100°F water bath

5. Bath (out) - time the sample was removed from the 100°F water bath

6. Time of Analysis - time the screening(s) were taken



LEGEND:

- EP-1 ⊕ EXISTING PIEZOMETER INSTALLED BY CIBA-GEIGY DURING THE DECOMMISSIONING OF THE FACILITY
- P-1S ⊕ EXISTING PIEZOMETER INSTALLED DURING THE PRELIMINARY INVESTIGATION (1988)
- MW-1S ○ EXISTING MONITORING WELL INSTALLED DURING THE PRELIMINARY INVESTIGATION (1988)
- P-20D ⊕ PROPOSED PIEZOMETER
- RW-1 ● PROPOSED BEDROCK MONITORING WELL
- MW-10S ◆ PROPOSED RELEASE CHARACTERIZATION MONITORING WELL

NOTE:

BORING LOCATIONS BASED ON MONITORING WELL AND PIEZOMETER SURVEY BY WATERMAN ENGINEERING COMPANY OF EAST PROVIDENCE, RHODE ISLAND.

BASE MAP SOURCE:

GEOD CORPORATION OF NEWFOUNDLAND, NEW JERSEY. MAPPED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS. DATE FLOWN: 2 APRIL 1988.

EXISTING AND PROPOSED MONITORING WELLS AND PIEZOMETERS CIBA-GEIGY FACILITY CRANSTON, RHODE ISLAND

WOODWARD-CLYDE CONSULTANTS

CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
WAYNE NEW JERSEY

DR BY KF	SCALE 1:2400	PROJ NO	87X4660
CK'D BY PN	DATE 4 MAR 1990	FIG NO	3-3

FIGURE A

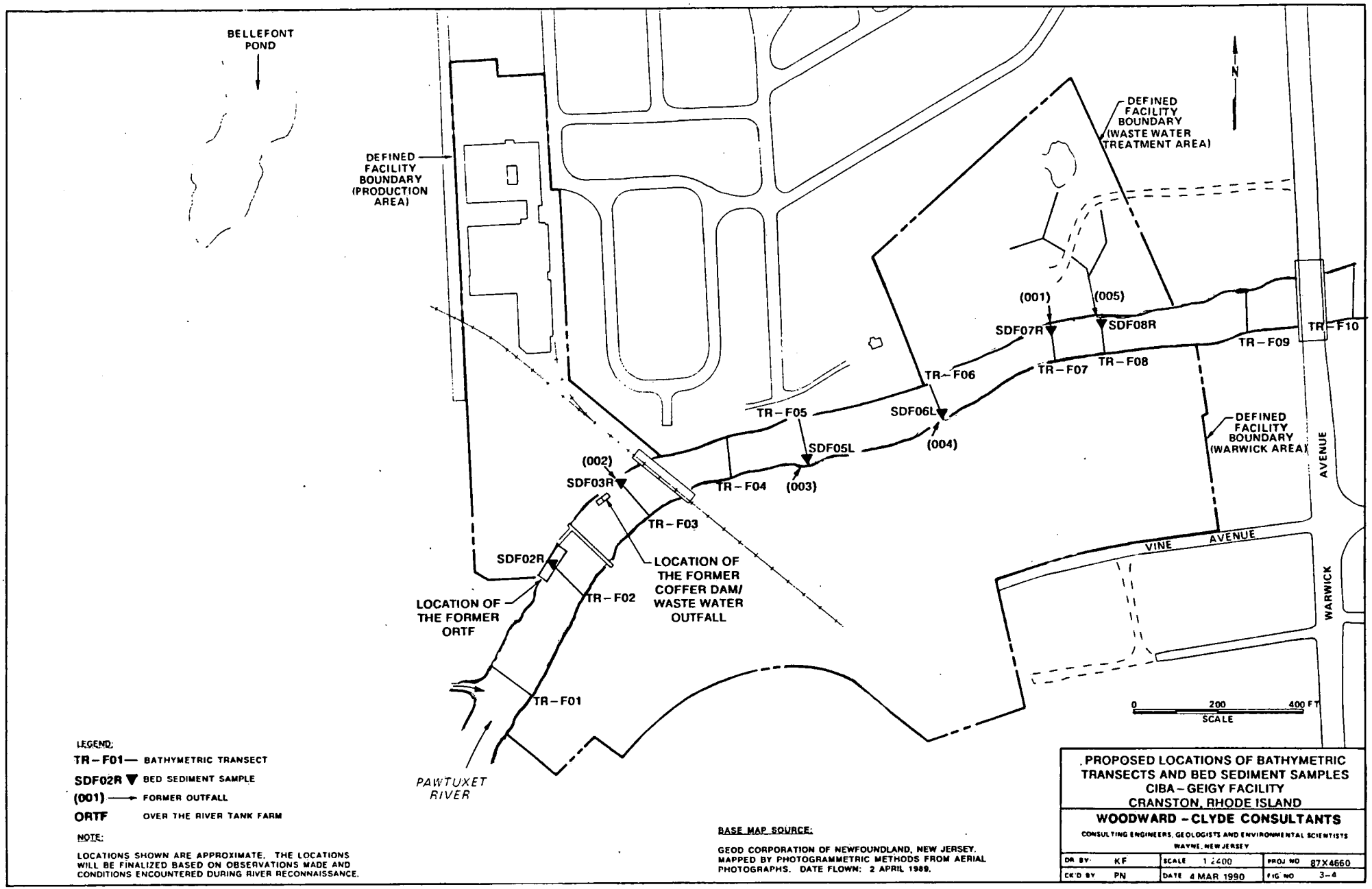

BELLEFONT POND
DEFINED FACILITY BOUNDARY (PRODUCTION AREA)
DEFINED FACILITY BOUNDARY (WASTE WATER TREATMENT AREA)
DEFINED FACILITY BOUNDARY (WARWICK AREA)
N
(001)
(005)
SDF07R
SDF08R
TR-F10
TR-F09
TR-F08
TR-F07
TR-F06
TR-F05
SDF06L
(004)
SDF05L
(002)
SDF03R
TR-F04
(003)
TR-F03
SDF02R
LOCATION OF THE FORMER COFFER DAM/ WASTE WATER OUTFALL
LOCATION OF THE FORMER ORTF
TR-F02
TR-F01
PAWTUXET RIVER
VINE AVENUE
WARWICK AVENUE
0 200 400 FT
SCALE
LEGEND:
TR-F01 — BATHYMETRIC TRANSECT
SDF02R ▼ BED SEDIMENT SAMPLE
(001) → FORMER OUTFALL
ORTF OVER THE RIVER TANK FARM
NOTE:
LOCATIONS SHOWN ARE APPROXIMATE. THE LOCATIONS WILL BE FINALIZED BASED ON OBSERVATIONS MADE AND CONDITIONS ENCOUNTERED DURING RIVER RECONNAISSANCE.
BASE MAP SOURCE:
GEOD CORPORATION OF NEWFOUNDLAND, NEW JERSEY. MAPPED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS. DATE FLOWN: 2 APRIL 1989.
PROPOSED LOCATIONS OF BATHYMETRIC TRANSECTS AND BED SEDIMENT SAMPLES
CIBA-GEIGY FACILITY
CRANSTON, RHODE ISLAND
WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS, GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS
WAYNE, NEW JERSEY
DR BY KF
CK'D BY PN
SCALE 1:2400
DATE 4 MAR 1990
PROJ NO 87X4660
FIG NO 3-4

FIGURE B